BUFFED PAD WITH CENTRAL PORTION OF THE WORKING NAP REMOVED

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ABSTRACT

A rotatable buffer pad is disclosed which is so constructed that all of the working nap is located in the outer annular area thereof. Such a construction eliminates the working nap on central portion of the buffer pad which does not contribute to the buffing action and which becomes soggy and ineffective with the substance used for buffing. Such a construction further aids in controlling the rotating buffer pad by eliminating the kicking action that tends to result from the tilting of the buffer pad about the high, ineffective, central portion of the working nap.

5 Claims, 12 Drawing Figures
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This invention relates to power driven buffing devices and more particularly to improved buffer pad structures for such devices.

Buffing devices comprise rotatable backup plates with buffer pads mounted on the front surface thereof. The buffer pads are conventionally made by providing a nap of wool on a circular backing of canvas. The entire working surface of the pad is covered with such a nap with the exception of a small hole in the center thereof through which a clamping nut is inserted for holding the buffer pad on the backup plate. However, because of the gathering of the nap about the center of the pad the clamping nut is also substantially covered by the nap.

In the manual operation of such a rotating buffing device it has been found that the nap in the central, circular portion of the buffer pad, because of its relatively slow rotating movement, contributes very little to the buffing action and, in fact, may be a hindrance thereto. Thus although a wet cleaner, for example, applied onto the buffer pad working surface is thrown off at the outer portion thereof as a result of the high rotating speed at which the outer portion travels, the nap on the central portion tends to become soggy with the cleaner or other substance used for buffing the surface, and actually tends to smear or otherwise deposit the wet cleaner on the surface it makes contact with rather than accomplish the desired buffing of the surface. Still further it has been found that when such a buffing device is manually positioned with the working surface of the buffer pad flat against the surface to be buffed, the slow moving central portion of the pad tends to be the high spot, and the slightest tilting of the pad brings one side thereof in contact with the surface to be buffed, causing the pad to kick out such that caution must be exercised by the operator to maintain control of the device. Furthermore, when the operator tilts the buffing device, that is, lays only one side of the working surface of the buffer pad against a surface to be buffed, the actual area of the working surface of the pad available for buffing the surface is cut down such that less work is accomplished.

Accordingly, one of the objects of the present invention is to provide a power driven, rotating buffing device that includes a buffer pad in which the central portion of the nap therefor, which does not contribute to the buffing action, is eliminated from the pad.

Another object of the invention is to provide a manually operated, power driven buffing device which is relatively easy to control.

Still another object of the present invention is to provide a buffer pad for a manually operated, power driven, rotating buffing device wherein the buffer pad is constructed so as to enable all the nap provided on the working surface thereof to be used to provide the buffing action.

These and other objects and advantages of the present invention will be made apparent from the following description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a plan view of a buffing device including one embodiment of the buffer pad of the present invention;
FIG. 2 is a cross-sectional view of the buffing device taken along lines 2-2 of FIG. 1;
FIG. 3 is a cross-sectional view of the attachment for the buffing device as taken along lines 3-3 of FIG. 2;
FIG. 4 is an exploded view of the component parts comprising the buffing device shown in FIG. 2;
FIG. 5 is a plan view of the buffing device including another embodiment of the buffer pad of the present invention;
FIG. 6 is a cross-sectional view of the buffing device as taken along line 6-6 of FIG. 5;
FIG. 7 is a cross-sectional view of the attachment for the buffing device as taken along line 7-7 of FIG. 6;
FIG. 8 is an exploded view of the component parts comprising the buffing device shown in FIG. 6;
FIG. 9 is an overall perspective view of a buffing device including another embodiment of the buffer pad of the present invention;
FIG. 10 is a cross-sectional view of the buffing device as taken along line 10-10 of FIG. 9;
FIG. 11 is a partial plan view, partly sectionalized, of the buffing device in FIG. 10 as taken along line 11-11, and
FIG. 12 is an exploded view of the component parts comprising the buffing device shown in FIG. 10.

Referring to FIGS. 1-4 of the drawings, a buffing device, generally denoted by the reference numeral 10, includes a buffer pad 11, constructed in accordance with the present invention. The buffer pad 11 is provided with a backing formed of a circular sheet of canvas 13 having a central opening 15. The canvas 13 typically has an outer diameter of 8 1/2 inches and the central opening therein typically has a diameter of three-fourths inch. Tufts of lambs' wool of approximately 1 1/4 inches in length are sewn on the front working surface of the canvas 13 to form a nap 17. The tufts of lambs' wool are sewn on the entire outer annular portion of the canvas 13 starting at an inner radius spaced outwardly from the edge of opening 15. Accordingly, a central circular portion 19 of the pad 11, which typically has a diameter of 3 inches, has no lambs' wool sewn thereon. It is thus seen that the central circular portion 19 of the pad 11 which is not provided with a working nap of lambs' wool has a diameter which is approximately one-third of the diameter of the canvas backing. The tufts of wool forming nap 17 extend in a direction substantially normal to the canvas 13 over most of the working surface of the pad 11. However, in the region adjacent the bare central portion 19 of the canvas 13 the nap 17 tends to slightly lean radially inwardly and in the region of the outer circumference of the canvas the nap tends to lean radially outwardly such that part of it lies substantially in the same plane as the canvas 13. A second circular sheet of canvas 16, identical in shape to the canvas 13, may be glued over the latter for the purpose of covering up the ends of the tufts of wool sewn thereon and for further reinforcing the backing.

In order to rotate the buffer pad 11 it is held on a rotatable circular backup plate 22 which is adapted to be mounted by a central holder 25 on the projected end 33 of a spindle 35 of a power driven unit. The circular backup plate 22 is formed of a relatively hard rubber material and is provided with a central opening 23. The back up plate 22 has an outer diameter smaller than the canvas backing of the buffer pad 11 such as to give a degree of rigidity thereto while permitting the outer circumferential edge portion of the canvas backing to be free to bend when under pressure. The center holder 25 for the backup plate 22 is formed of a metal cup 26.
having an outer flange 27 on the upper end thereof. A metal cover 29 is provided for cooperating with the flange 27. The inner edge portion of the central opening 23 of the backup plate 22 is held between the outer flange 27 of the cup 26 and the cover 29 therefor, which flange and cover are securely clamped together by a number of equally spaced rivets 31.

The holder 25 has a central opening 28 in the bottom of the cup 26 for receiving the threaded projected end 33 of driving spindle 35. The cover 29 of the cup 26 has a centrally depressed portion which is provided with a central opening 30 formed with three equally spaced flat sides 37 which conform with flats 41 on the body of a clamping nut 39. Thus when the body of the clamping nut 39 is inserted through the central opening 30 of the cover 29, its flats 41 engage the flat sides 37 provided on the opening 30. The nut 39 is thus engaged to the cover 29 such that they rotate as a single member. Then during assembly of the device 10 when the threaded projected end 33 of the driving spindle 35 is threadably engaged on the clamping nut 39, a cap 40 on the nut 39 engages the inner edge portion of the central opening 15 of the canvas backing of the buffer pad 11 and securely clamps the backing against the upper surface of the cover 29. When the buffing device 10 of the present invention is to be used, the component parts are assembled together as shown in FIG. 4. First the driving spindle 35 of the buffing device is held in an upright position, and the backup plate 22 is dropped over the threaded projected end 33 of the spindle 35 such that the bottom of the cup 26 of the center holder 25 for the backup plate 22 rests on the shoulder 36 of the driving spindle 35, and the threaded projected end 33 of the driving spindle 35 extends upwardly through the central opening 28 in the bottom of the cup 26 and the opening 30 in the cover 29. Then the buffer pad 11 is placed on the backup plate 22 with the central opening 15 in the canvas backing therefor surrounding the threaded projected end 33. The body of the clamping nut 39 is then inserted from the front of the pad 11 through the central opening 15 of the canvas backing such that it fits in the opening 30 of the cover 29. The threaded projected end 33 of the driving spindle 35 is then advanced into the nut 39 such as to clamp the edge of the central opening 15 of the canvas backing between the cap 40 of the nut 39 and the cover 29 of the central holder 25.

The central circular portion 19 of the pad may be left bare, or as noted in FIGS. 2 and 4 a small circular insert 43 having a relatively short nap on the surface thereof, may be held in position on the cap 40 of nut 39 by being glued thereto. The purpose of this insert 43 is to prevent the surface 19 of the canvas and the cap 40 of the nut 39 from touching and thereby defacing the surface being buffed. The insert 43 may have an opening similar to the opening 15 in the canvas backing such that the body of the clamping nut 39 extends therebetween whereby the insert 43 is then clamped in position by the cap 40 of the clamping nut 39. In this latter arrangement, the short nap on the insert extends above cap 40 and thus tends to protect the surface being buffed from being touched by the cap.

Referring next to FIGS. 5-8, a buffing device, generally denoted by the reference character 50, includes another embodiment of a buffer pad 51 constructed in accordance with the present invention. Here the buffer pad 51 is provided with a backing formed of a circular sheet of canvas 53 having a central opening 55. Typically the outer diameter of canvas 53 is 8 ¾ inches and the diameter of the central opening 55 is three-fourths inch. Tufts of lambs' wool forming nap 57 are sewn on an annular area of the outer portion of the canvas 53 starting at an inner radius spaced outwardly such as to leave a circular central portion 59, that is typically 4 inches in diameter, which is bare of the long tufts of lambs' wool. Then tufts of lambs' wool considerably shorter in length, approximately one-fourth inch, are sewn to form a short nap 60 on an annular area of the central portion 59 of the canvas 53 starting at a radius spaced outwardly from the edge of opening 55. The long tufts of lambs' wool forming nap 57 extend substantially normally to the canvas 53 over most of the working area of the buffer pad 51. However, in the region adjacent the circular central portion 59 of the canvases 53, the nap 57 tends to slightly lean radially inwardly and in the region of the outer circumference of the canvas the nap 57 tends to lean radially outwardly such that part of it lies substantially in the same plane as canvas 53. A second circular sheet of canvas 56 identical in shape to the canvas 53, may be glued over the latter for the purpose of covering up the ends of the tufts of wool sewn thereon and for further reinforcing the backing.

The center holder for the buffing pad shown in FIGS. 5-8 is the same as the center holder 25 shown in FIGS. 1-4 and accordingly the parts bear the same reference numerals. Thus during assembly of the component parts as shown in FIG. 8, the buffer pad 51 is placed against backup plate 22 with the protruding threaded end 33 of the driving spindle 35 extending through the center holder in the manner previously described in connection with FIG. 4, and the clumping nut 39 is then placed over the projected end 33 of the driving spindle 35 and tightened relative thereto to clamp the inner edge of central opening 55 of the canvas backing between the cover 29 and the nap 57. When the clamping nut 39 is tightened down, the shorter nap 60 on the central part of the buffer pad 51 is high enough to keep the cap 40 of clamping nut 39 from damaging anything when the buffer pad is being moved over the surface being buffed.

Reference will next be made to FIGS. 9-12 which shows the buffing device, generally denoted by reference numeral 65, which includes a further embodiment of a buffer pad 70 constructed in accordance with the present invention. Thus FIG. 9 shows the housing 66 which encloses a motor used for rotating the driving spindle 68 to which the buffer pad 70 is attached. Housing 66 has a main handle 71 on the back end thereof and a cross rod 72 extending from the front side thereof by which the operator handles the buffing machine. A cord 74, only a portion of which is illustrated, is connected to an outlet for supplying the power required to drive the motor enclosed within the housing 66.

In this embodiment, the backing for the buffer pad 70 is formed of a circular sheet of canvas 75 with the central portion cut out to form a much larger central circular opening 76 than provided for the buffer pads shown in FIGS. 2 and 6. The sheet of canvas 75 is typically 8 ¾ inches in diameter and the central circular opening 76 is typically 3 inches in diameter. The tufts of lambs'
wool forming the nap 78 are sewn onto the canvas 75 starting at a point back of the inner edge of the circular opening 76 such as to leave an inner rim portion 79 of the canvas bare. The tufts of lambs' wool extend generally normal to the canvas except at the outer circumferential edge of the canvas where the tufts tend to lean down into the plane of the canvas.

The mounting device for the buffer pad 70 includes a rubber backup plate 81 having an outer diameter smaller than the outer diameter of the canvas 75 and a central opening 82 the same size as the opening 76 of the canvas 75. The rubber backup plate 81 has a relatively thin outer portion 84 which flares inwardly to form a thicker inner portion 85. A metal cup shaped member 87 is provided with an outer flange 88 on the mouth thereof whose surface contacts the back inner portion of the backup plate 18 and is glued thereon. A nut-like member 90 is located in a central opening on the base of the cup shaped member 87 and welded in position. A flat circular reinforcing member 92 fits within the cup shaped member 87 flush with the inner end of the nut-like member 90 and is welded in position. The inner cylindrical surface near the mouth of the cup shaped member is threaded and a cylindrical retaining ring 95 provided with threads on the outer surface thereof threadably engages the threaded inner cylindrical surface of the member 87. The buffer pad 70 is held in position against the rubber backup plate 81 by an outer lip 94 on the retaining ring 95 which clamps the base inner edge 79 of the buffer pad 70 against the inner edge of the backup plate 81 and the outer flange 88 of the member 87 when the cylindrical portion of the retaining ring 95 is threaded onto the member 87.

It is thus seen that the mount of the embodiment of the buffing device shown in FIGS. 9-12 is shaped to prevent the recessed portion of the member 87 from touching a contoured surface being buffed. Furthermore, the use of a mount in the form of a cup shaped member with an open mouth and the use of a buffer pad 70 with the central portion removed permits all the nap 78 provided on the working surface of the buffer pad 70 to be placed flat on the surface to be polished and when pressure is applied it is noted that the buffer pad runs true with no kicking action.

In assembling the buffing device 65 shown in FIGS. 9-12, the threaded projected end 69 of the driving spindle 68 threadedly engages the nut-like member 90 welded on the base of the cup shaped member 87 which supports the backup plate 81 on the other end thereof. The canvas 75 of the buffer pad 70 is then positioned over the backup plate 81 with its opening 76 aligned with the central opening 82 of the backup plate. The cylindrical retaining ring 95 is then positioned on the mouth of the member 87 and threaded therein by the use of a key 96 formed of a flat rectangular piece of metal. The key 96 is inserted within the retaining ring 95 such that the ends of the key engaged the lugs 98 provided on the diametrically opposite sides of the inner surface of the retaining ring. The key 96 is then manually twisted to advance the retaining ring 95 within the mouth of the member 87 until the outer lip 94 of the retaining ring engages the inner edge 79 of the central opening 76 of the canvas 75 forming the backing of the buffer pad 70 and thus clamps it against the rubber backup plate 81.

It should now be clearly understood that eliminating the central portion of the working nap on a buffer pad is highly desirable in that a manually manipulated buffing device using such a buffer pad is easier to control. Further, eliminating the central portion of the working nap overcomes the problem of the dead center portion becoming wet and soggy with cleaner or wax resulting in blemishing of the surface being buffed. Furthermore, inasmuch as the central portion of the working nap of the buffer pad that is removed is not useful in providing a buffing action, the elimination thereof provides a saving in the amount of lambs' wool required for sewing on the canvas backing.

While the buffing devices shown and described herein are admirably adapted to fulfill the features of advantages previously mentioned as desirable, it is to be understood that the invention is not to be limited to the embodiments shown and described but that the means and construction herein disclosed are susceptible of modification in form, proportion and arrangement of the parts without departing from the principle involved or sacrificing any of its advantages, and the invention is therefore claimed in embodiments of various forms all coming within the scope of the claims which follow.

What is claimed is:

1. A buffing device comprising:
a flat circular sheet of canvas backing having the front surface thereof divided to define a central circular portion and an outer annular portion adjacent said central circular portion,
said central circular portion having a diameter of approximately one-third the diameter of said circular sheet of canvas backing,
a working nap of wool attached to and covering said outer annular portion of said circular sheet of canvas backing,
said working nap of wool extending normal to the surface of the sheet of canvas backing over most of the outer annular portion thereof with the working nap near the outer edge of said annular portion tending to lean outwardly such as to lie in the plane of said sheet of canvas backing,
said central portion of said sheet of canvas backing being bare of any working nap, and
an opening in the center of said central circular portion of said sheet of canvas backing.

2. The invention in accordance with claim 1 wherein the central circular portion of said canvas backing is provided with a shorter protective nap of wool.

3. A buffing device comprising:
a circular sheet of canvas backing having on the front surface thereof a central circular portion and an outer annular portion surrounding said central circular portion,
said central circular portion having a diameter of approximately one-third the diameter of said circular sheet of canvas backing,
a working nap of wool provided on said outer annular portion of said canvas backing,
said working nap of wool extending normal to the surface of the sheet of canvas backing over most of the outer annular portion with the working nap on the outer edge of said annular portion tending to lean outwardly such as to lie in the plane of said sheet of canvas backing,
said working nap being formed of tufts of lambs' wool approximately 1 % inches in length sewn on said
outer annular portion of said canvas backing, and a shorter protective nap of wool provided on the central circular portion of said canvas backing, said shorter protective nap being formed of tufts of lambs' wool approximately one-fourth inch in length sewn on the central circular portion of said canvas backing.

4. The invention in accordance with claim 1 wherein a separate insert comprising a backing provided with a protective nap much shorter than the working nap is used to cover the bare central circular portion of said sheet of canvas backing.

5. The invention in accordance with claim 1 wherein the opening in the center of the central circular portion of the canvas backing is almost as large as the central circular portion such that the circular central portion of the canvas comprises only a short rim of the canvas extending inwardly from the inner edge of the outer annular portion of the canvas.